Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)
	)
Petition for Rulemaking of FiberTower, Inc. for	) RM-11043
Amendment of Part 101 of the Commission's Rules	)

OPPOSITION OF THE SATELLITE INDUSTRY ASSOCIATION

The Satellite Industry Association ("SIA") opposes the Petition for Rulemaking of FiberTower, Inc. ("Petition") seeking changes in the Part 101 rules to permit the deployment of smaller fixed service ("FS") antennas in the 10.7-11.7 GHz band. SIA is a U.S.-based trade association representing the leading U.S. and international satellite manufacturers, service providers, and launch service companies. SIA serves as an advocate for the commercial satellite industry on regulatory and policy issues common to its members. With its member companies providing a broad range of manufactured products and services, SIA represents the unified voice of the commercial satellite industry.[1]

FiberTower acknowledges that smaller FS antennas, because of their less tightly focused beams, can cause increased interference to satellite earth stations. Petition at 3. FiberTower claims that its proposal will place "any burden arising from a small antenna on the party using it." *Id.* In fact, however, the rule

[1] SIA includes Executive Members The Boeing Company; Globalstar, L.P.; Hughes Network Systems, Inc.; ICO Global Communications; Intelsat; Lockheed Martin Corp.; Loral Space & Communications Ltd.; Mobile Satellite Ventures; Northrup Grumman Corporation; PanAmSat Corporation and SES Americom, Inc. and Associate Members Inmarsat and New Skies Satellites Inc.

changes suggested by FiberTower do nothing to protect critical Fixed-Satellite Service ("FSS") operations from increased interference due to the deployment of smaller FS antennas in the 10.7-11.7 GHz band. Accordingly, SIA urges the Commission to reject the Petition.

I. BACKGROUND

In its Petition, FiberTower notes that in 2002, the Commission modified its antenna standards for FS operations in the 10.55-10.68 GHz band to permit the introduction of smaller antennas. Petition at 3. FiberTower seeks similar action in the 10.7-11.7 GHz band, arguing that authorizing the use of smaller antennas, which are lighter and less expensive, will promote efficient use of spectrum and lower costs for end users. *Id*. at 2. FiberTower claims that the proposed rule changes will help accommodate FS operators displaced by spectrum reallocation, including the reallocation of 18 GHz spectrum to satellite operations. FiberTower also alleges that FS operators face difficulties in coordinating new links in the 4 and 6 GHz bands because of "permissive" earth station coordination rules in that spectrum. *Id*.

FiberTower requests amendment of the Part 101 rules to permit the use of two-foot antennas in the 11 GHz band as an alternative to the four-foot antennas required under current specifications. *Id*. at 1. Unlike the 10 GHz band, however, the 11 GHz band is shared with FSS systems. FiberTower recognizes that the proposed change in standards could adversely affect other users of the band. Specifically, FiberTower notes that in general, smaller antennas have a wider main

lobe and bigger sidelobes relative to the main lobe. *Id*. at 2. As a result, smaller antennas may be more likely to cause interference to satellite earth stations located off the antenna axis. *Id*. at 3. FiberTower alleges, however, that its proposals will be "transparent" to other licensees and applicants, bringing the cost and flexibility benefits of small antennas "with no detriment to other users of the band." *Id*.

SIA agrees that this is the appropriate standard by which to judge the FiberTower Petition. However, contrary to FiberTower's claims, FiberTower's proposal would place new burdens on FSS use of the 11 GHz band, which is already constrained under current rules. The harm to FSS operations cannot be justified and requires the Commission to reject the FiberTower proposal.

II. FIBERTOWER HAS NOT JUSTIFIED ITS PROPOSED CHANGES TO THE 11 GHZ RULES

Ensuring effective access to the 10.7-11.7 GHz band is critical for FSS operations. The band is used for geostationary satellite ("GSO") operations, and a portion of the spectrum is designated as a planned band under Appendix 30B of the ITU rules. In addition, the Commission has authorized non-geostationary satellite ("NGSO") systems to use the band for feeder link operations.

The band is shared on a co-primary basis between FS and FSS, but the current rules are skewed heavily in favor of FS systems. Specifically, footnote NG 104 specifies that satellite use of the 10.7-11.7 GHz band is limited to international systems.[2] The Commission has strictly interpreted this footnote as

[2] *See* 47 C.F.R. § 2.106, Footnote NG 104 ("The use of the bands 10.7–11.7 GHz (space-to-Earth) and 12.75–13.25 GHz (Earth-to-space) by the fixed-satellite service

barring any use of the 11 GHz band for domestic GSO operations, even by a satellite system that provides international services as well.[3] The Commission has made clear that this limitation was designed to benefit terrestrial operations. Specifically, the purpose of the rule is "to limit the number of FSS earth stations with which the terrestrial fixed service would be required to coordinate." *Id.* (footnote omitted).

The restriction has certainly had its intended effect. As FiberTower recognizes in its Petition, FSS use of the 11 GHz band includes only "a limited number of international downlink earth stations and proposed gateway earth stations for non-geosynchronous satellite systems." Petition at 2 n.3.

Although FSS use of the 11 GHz band to date has been limited, the band is vital for expansion purposes. As demand intensifies for Ku-band capacity, particularly in congested portions of the satellite arc, satellite operators increasingly will need to shift customers to 11 GHz frequencies in cases in which their operations are compatible with the coordination requirements for the band, thereby freeing up conventional Ku-band spectrum for other purposes. The 11 GHz band is uniquely suited for this purpose, because it is immediately adjacent to the conventional Ku-band.

These FSS uses of 11 GHz spectrum – present and future – need to be protected. Gateway operations are a critical element of NGSO system operations,

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in the geostationary-satellite orbit shall be limited to international systems, *i.e.,* other than domestic systems.")

[3] *See, e.g., GE American Communications, Inc.,* 15 FCC Rcd 3385 at ¶ 10 (Sat. & Radiocomm. Div. 1999).

and any infringement on their access to spectrum would fundamentally compromise the system's viability. Operators of GSO systems with 11 GHz payloads have invested tens of millions of dollars in deploying extended Ku-band capacity. Any impairment of earth stations' ability to receive signals in this band would prevent operators from recouping these significant investments. The Commission should not consider any changes to the 11 GHz rules that would adversely affect existing FSS operations or create a new obstacle to future FSS deployment.

The FiberTower proposal would threaten critical FSS uses of this band. As the Petition explains, the use by satellite systems of the 11 GHz spectrum cannot interfere with terrestrial operations. Petition at 6. The band is used for downlink transmissions originating 22,300 miles from the earth's surface that can only be received using sensitive FSS earth stations. Because of that sensitivity, however, FSS earth stations are extremely vulnerable to the increased interference that could be caused by deployment of smaller FS antennas. *Id.*

FiberTower claims that under its proposal, the burden associated with deployment of smaller antennas would rest entirely on the small antenna operator, with no detrimental effect on earth station operations. For example, the Petition states that coordination of a new application to use a small antenna would fail if an existing earth station would suffer greater interference from the applicant than it would if the applicant used a larger antenna. *Id.* at 7. Even after a small antenna is licensed, the Petition suggests that the licensee might still have to modify its operations to accommodate new earth station operations. Specifically, the Petition

states that if an earth station applicant would receive interference from a small antenna licensee but would have been able to coordinate if the licensee had a large antenna, the small antenna licensee would be obliged to cure the interference, either by upgrading to a large antenna or by cutting back its power. *Id*. at 7-8.

In fact, however, the FiberTower proposal does not protect FSS spectrum access. First and most importantly, the new rule sections proposed by FiberTower to address coordination of smaller antennas apply only to other FS licensees and applicants – there is no mention of earth stations. FiberTower's proposed new Section 101.103(j)(2) would allow a new FS applicant to require a small antenna licensee or applicant to modify its operations to reduce predicted interference, but there is no language that would give corresponding rights to an earth station applicant. Thus, as written, the FiberTower proposal gives no protections to future FSS applicants in the 11 GHz band.

Second, even assuming that the omission of earth stations from the FiberTower proposed rules was an oversight, the language of the rule is vague with respect to how a new applicant would exercise its rights. The rule indicates that the applicant can require the small antenna operator or applicant to reduce its interference, but gives no guidance on the mechanics. Would there be a time limit for an existing small antenna operator to decide whether to upgrade to a larger antenna or cut back its power? Or would it be required to reduce power immediately pending any change in its antenna equipment? How would the new applicant enforce its rights? What would the consequences be of a small antenna

operator's failure to comply with a request to reduce interference? All these questions are unanswered by the FiberTower proposal.

Third, FiberTower's proposal does not address significant technical issues raised by its proposal. For example, FiberTower fails to consider the problem of aggregate interference to earth station operations. FiberTower claims that because of their lower weight and cost, small antennas can be deployed in many more locations than can larger antennas. Petition at 2. This suggests that sanctioning of smaller antennas could greatly increase the number of antennas near to any given 11 GHz earth station. As a result, an earth station operator could face a situation in which it experiences harmful interference as a result of the aggregate effect of several nearby FS antennas, even if each antenna standing alone would not create a problem.

Pointing error is also a more substantial problem when smaller antennas are used. Small antennas are more difficult to point accurately both because the equipment itself is smaller and because of the characteristics of their antenna patterns. As the Petition recognizes, a smaller antenna has a "less tightly focused beam, compared to a large antenna" (Petition at 2). It is therefore harder to determine where the antenna's signal peak is, which is necessary to verify whether the antenna is pointed accurately. A mispointed small antenna could result in an earth station experiencing higher levels of interference than was predicted at the coordination stage. FiberTower's Petition does not even recognize, much less

address, these technical problems, both of which could result in FSS systems being subjected to potentially harmful interference.

Thus, contrary to its assertions, FiberTower has not presented a proposal that protects earth stations from detrimental effects. In its decision regarding deployment of two-foot antennas in the 10.55-10.68 GHz band, the Commission emphasized its concern that "the larger beamwidth and poorer sidelobe suppression of the smaller diameter antennas will result in increased interference."[4] But in that instance the Commission determined that on balance, the benefits of the rule change in that band outweighed the harms of increased interference. *Id.*

Given the defects in the FiberTower proposal, the same conclusion cannot be reached here. Implementation of the rule changes suggested in the Petition would clearly have a significant adverse effect on earth station spectrum access, impairing further FSS operators' ability to use a band where the rules today are already stacked heavily in favor of FS systems.

Furthermore, FiberTower's attempt to show a need for increased flexibility for FS operations is unpersuasive. In particular, FiberTower repeats here claims previously made by the Fixed Wireless Communications Committee ("FWCC") concerning the impact of full-band, full-arc coordination of earth stations on availability of 4 and 6 GHz spectrum for terrestrial FS operations. The Commission considered and rejected the FWCC's request for modification of earth

[4] *Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services*, 17 FCC Rcd 15040 at ¶ 77 (2002).

station licensing rules because it found that the record did not support FWCC's contentions. Specifically, the Commission held that there was an absence of evidence in the record concerning "the extent to which our current rules have resulted in injury to the terrestrial fixed service community."[5] FiberTower's attempt to resurrect allegations the Commission has already dismissed as factually unsupported as the basis for seeking new rule changes must meet the same fate as the original FWCC petition.

III. CONCLUSION

In short, FiberTower has failed to justify rule changes that would permit routine licensing of smaller antennas in the 11 GHz band. Because its proposal would interfere with FSS spectrum rights, SIA urges the Commission to reject FiberTower's Petition.

Respectfully submitted,

SATELLITE INDUSTRY ASSOCIATION

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[5] *FWCC Request for Declaratory Ruling on Partial-Band Licensing of Earth Stations in the Fixed-Satellite Service that Share Terrestrial Spectrum*, 17 FCC Rcd 2002, 2007 (2002).